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LLNL-CALIOPE PROGRAM OVERVIEW

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ABSTRACT

The CALIOPE Program at LLNL is primarily based on the use of high-average-power, diode-pumped, Nd lasers for active remote sensing for nuclear nonproliferation applications. Laser component and subsystem development in the NIR, MWIR, and UV is a major element of the program. In addition, this technology is being applied concurrently to field demonstrations of laser remote sensing systems based on multi-line MWIR DIAL.

Significant progress has been made over the last year in all areas of the LLNL CALIOPE Program. A 35W, 100 Hz, single-mode, Nd laser has been developed as a first generation pump source for laboratory and field use. This laser has been used for the source for the first generation MWIR DIAL demonstration system at the RSTR facility at NTS and will form the basis for development of high power UV laser systems. Simultaneous multi-line extraction from a seeded MWIR OPO was demonstrated in the laboratory and used in the field demonstrations. A coherent, high-frequency, selectable, multi-line laser source using Spatial Light Modulators has been demonstrated in the laboratory. Two new lasers operating in the MWIR spectral region have been demonstrated. The technical details of each of these accomplishments will be discussed in separate talks elsewhere in this conference.

This talk will provide a summary of the LLNL program and relate the programmatic goals and technical accomplishments to the requirements of the nuclear nonproliferation program.

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